

*Michel (M.)*

INTRODUCTORY ADDRESS,

DELIVERED BEFORE

# THE CLASS

OF THE

MEDICAL COLLEGE OF SO. CA.

NOVEMBER 1st, 1851.

BY MYDDLETON MICHEL, M. D.  
Lecturer on Anatomy and Philosophy.

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CHARLESTON:

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CHARLESTON, NOV. 4th, 1851.

DR. MYDDLETON MICHEL,

*Dear Sir* :—After having listened, with profound satisfaction and sincere pleasure, to your instructive introductory Address, we deem that we would be recreant to our true duty, were we to permit such eloquence to remain unperpetuated. In the name of the class, therefore, and others, who had the pleasure of hearing it, we ask that the manuscript be granted us for publication.

With sentiments of sincere and high regard,

We are, sir, your most obedient servants.

J. ROBT. FLEMING, of Ala. <i>Chairman.</i>	{ CLARENCE L. ROBARDS, Miss THOMAS P. GARY, Ala. B. F. CARTER, Ga. C. DAVEGA, S. C. J. L. ROBBINS, N. C.
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*Charleston, Nov. 5th, 1851.*

To Messrs. FLEMING, Chairman of the Committee; C. L. ROBARDS, Miss.; T. P. GARY, Ala.; B. F. CARTER, Ga.; C. DAVEGA, S. C.; J. L. ROBBINS, N. C.

*Gentlemen*:—I return you my sincere thanks for your note of yesterday. In complying with the request it contains, there is no assumption of feigned modesty in declaring, that I fear this imperfect sketch of the philosophy of Medicine, will be found to ill deserve the indulgent partiality which it has received. The manuscript will be at your disposal as soon as it is copied.

I am, with sentiments of the highest regard,

Yours, truly,

W. M. MICHEL.



# ADDRESS.

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GENTLEMEN :

The kind invitation, sometime since accepted, requesting the delivery of an Address at the opening of my course of Lectures, is now to be as cordially responded to as it was gratefully received. It is difficult to decline the solicitations of friendship, or the invitations of flattery, without disappointing expectation by unwillingness to oblige, or accepting praise without an effort to deserve it; or I would abandon the design of arresting attention with what must be wanting in novelty, and despair in the recital of what has so often been anticipated. There is gratification, however, in recurring to such opinions as have secured the general assent of mankind, and instruction derived even from their frequent repetition. Those moments are never misemployed, in which we endeavor to determine the real nature of our pursuits, and survey them in their varied and exalted bearings upon the destiny of man : we are, thereby, often led to review the associated influences of the past, and the conflicting circumstances encountered by those who illustrate the present by their example, and mould the future by their labors. Such land-marks, along the rugged road of life remind us that

no obstacle is insurmountable to diligence and patience, no project inaccessible to perseverance and integrity; and encouraged by the successes, or instructed by the miscarriages of our predecessors, we early learn those lessons which may make a life illustrious.

We must ever view the commencement of any professional career; its slow progress and doubtful issues, with interest, increasing as knowledge accumulates and the standard of professional excellence is higher elevated, and we will oftentimes reflect with ourselves upon those means, which, though they raise not all to eminence, can sustain any at the level which dignity prescribes.

The nature of Medical acquirements and the means employed to attain them, the probability of preferments and the qualifications deserving them, the obligations they impose and the character which adorns them, are subjects worthy of contemplation, and will ever attract him whose mind is enlarged by the comprehensive survey of Medical pursuits, and whose heart is keenly sensitive to the beneficent mandates they enjoin.

To labor assiduously, with a capacity for knowledge, and to realize the hope of usefulness to others, are blossoms which bud and fruit which ripens in the garden of contentment. The heedless throng who ramble through life, or the mercenary slaves who, for gain, barter ignorantly the chief objects of existence, mistake the pleasures and occupations of the wise, and never emulate nor hold converse with the illustrious and the great. Some are engrossed with selfish considerations of private emolument, unprotected by the remotest alli-

ance to the noble thought of usefulness to their kind, passing like vapour amidst the bright luminaries which guide and instruct us, and vanishing without leaving in their name the impress of a single truth. Whilst others again, in the ignorant wantonness of ease, are content to exist deprived of the happy recollections of the past, and the yet more glorious anticipations of a future. But, by the assumption of the onerous duties of either of the professions, and by an unremitting application for the attainment of its requisitions, a few are exempted from the charges of labor estranged from the promotion of universal happiness, and indolence protected by the security of plenty. In accordance, therefore, with these distinguished exonerations, we find the several professions presiding over the moral, physical, and political destinies of man, and demanding, authoritatively, from their lofty positions, to be consoorted with attainments commensurate with the advantages they confer. Among the peculiar privileges of such pursuits, so long as happiness is exposed to destruction by disease, or pleasures interrupted by the invasions of pain; so long as universal attainments can alone pull down the hedges of superstition, and the barriers of prejudice, so long will the Medical profession hold a high rank in the intellectual sphere, and receive homage for talents which have secured her the flattering title she wears.

Coeval in origin with man's infirmities, rooted in the sympathies of his nature for the sufferings of others, we find the exercise of this divine art the early handmaid of religion, investing, with peculiar privileges, the dig-

nitaries of the priesthood—their temples, at once, places of worship and abodes for the sick, whilst from the rituals were sung praises to Apollo—God of light and of heat—while they furnished, perhaps, the very records of the success, for which their petitions were raised. Venerated with an awe which recognised a power delegated by the gods to their favorites, the priests, this mysterious knowledge was worshipped as part of religion itself, secretly transmitted a godlike legacy of hereditary right, which we may trace from Egyptian priesthood to the Grecian Asclepiadæ, whose illustrious descendants, the family of Hippocrates, embodied the earliest records of Medical science.

However beneficent in their design, the early votaries of this pursuit could only have exercised their prerogatives at the eminent hazard of life, until, counseled by the voice of the veteran of Cos—that pure model of an ancient eclectic, disdaining neither the possibilities of philosophy, nor the tediousness of research—they learned to battle with disease, beneath the Ægian shield of observation and experience, gathering facts on every side, until such conventional rules were acquired, as grew into the elements of an art, better fitted to facilitate its performance, and to develop the collateral sciences, upon whose immutable basis it should ever after rest for its successful fulfillment. But the lessons of wisdom and the examples of the great are soon forgotten, and, when presented to us again, perhaps wholly neglected, or else the toilsome labors and recondite investigations, so ably begun, would scarcely have been abandoned for the subtle vagaries of abstract philoso-



phy. That the mind was deflected, from the course of useful inquiries and attainable truths, by an ancient philosophy, will hardly be denied, when we consider that the exact sciences, whose demonstrative principles work their own applications, were themselves infected, contagiously, with philosophic abstractions. What the pure science of mathematics could not, therefore, escape, would necessarily embarrass a purpose, whose plan seemed to offer nothing more speculative than the means of healing a wound. To a philosopher, whose boast may have been endurance of pain, nothing could have been more useless and degrading than that knowledge, which offers a pillow of repose to anguished and drooping nature, and raises him again to ease or to health, who was weighed down incousolable, in hopeless despondency.

But that we might not judge ignorantly of antiquity, by charging them with errors which they never professed, nor hold those culpably delinquent, whose opinions were the forced results of education—Plato has, himself, declared: that art to be of debatable utility, that encourages vice by mitigating its punishments; that would return the inebriate to temporary relief, only that “reason may totter again on her throne,” or that would prepare the sensualist to resume his pleasures, to exhibit the defection of resolution from virtue’s path. The Eutopian philosophy looked with pity on a life prolonged through the assistance of art, and affected to despise a mind, whose exhausted energies could lay no more out upon study and speculation. It taught of no

advantage to be discovered in that quietude and peace which retires from disputation, and the allurements of dissipation or blandishments of vice, that it may prepare for us a conscience made void of offence.

With a system, intralling the mind beneath its despotic sway, it is only surprising that any progress was made. But to observe and record experience is almost intuitive with man; and while to be useful was esteemed by many to be vulgar, and to bend principles to practice was to degrade the sublimity of ancient learning, we may yet admire that unwearied patience which toiled against prejudices with an independence that ascertained much that was concealed, and often discriminated, with a nicety of precision and an accuracy of announcement, which left nothing to be desired.

That it was not the fortune of that knowledge, which professed to relieve diseases of men, to be wholly insensible to the splendid fictions of Grecian philosophy, we need only be reminded by the speculations of that age. Among these are first to be numbered the Hippocratic doctrine of humors, when the redundancy of the atrabile or phlegm, their qualities of bitter, sweet, and acid, or as modified by Erasistratus, their local aberrations were enough to explain all diseases. And when everything hung upon the sophistries of Epicurus, that Asclepiades should arise to declare, that when the atoms of the body were not associated in the regular order of arrangement, which, according to philosophy, chance had controlled, health was disturbed and maladies commenced. Or that a race of methodists, with Themison at their head, should see, in the con-

stricted and relaxed states of tissues, and in a mixed or compound condition of these, sufficient to explain what they did not understand. While again, it may be mentioned, that Athenæus and Agathinas ranked among the foremost of the Pneumatists—a sect who called to their aid that subtle spirit, which, by a supposed alliance with the recognised elements, fire, air, earth, and water, and, by a varied combination of these, maintained health or engendered disease.

It was thus when man, no longer willing to listen to speculation, resolved to be guided by experience alone, when the ascendancy was disputed by two great sects of physicians, and Menodotus among the empirics, treated the dogmatists with malignant censures, and contumelious language, that Archigenes and Galen spoke. The founder of the eclectic school, of whom much is said in the satires of Juvenal, and the still more illustrious Galen, anxious to arrest from oblivion the knowledge which time and labor had amassed, and, as if forewarned that the great lyceum of the world was to become the charnel house of war, when learning should seek a haven amidst the nations of the east, and darkness veil the ages to come, carefully selected and collated diligently whatever was conjectured to originate in truth.

But the genius of Galen not content in simply compiling attempted to create. He felt that the author who would instruct, must endeavor also to attract. The variability of those influences modifying disease, furnished him with new methods, and the luxuriance of his imagination embellished them with new hypo-

theses. In the system of this celebrated writer, the four elements and four humors were still to be retained, and to these spirits both natural, vital and animal were to be added. The principles of bodies he maintained were invisible, and therefore different from the elements whose properties render them recognizable. The humors of the body are in concordant relation with the essential and secondary qualities of bodies, and these qualities are determined by the presence or mixture of the elements. In the blood the elements appear to harmonize, but in the excrementitial products they predominate. The humors may stagnate and become putrid, while such putridity increases heat and fever is produced, unless elimination take place.

Such were some of the crudities with which the sages of antiquity continued to obscure what they could not define. But it is proper to confess, that in matters of simple observation, undeniable progress was effected. In the fundamental department of Medical science—anatomy—singular proficiency was attained. The disciples of Pathagoras and Thales, at a remote period, had already opened the portal which introduces us to the temple of Medical science. Alcmaëon and Heraclitus, Democritus and Empedocles, were conjoined laborers in the field of Anatomy. Nor can we forget the Stagirite of later day. This distinguished philosopher had recognized, amidst the perplexities of his system, that syllogistic reasoning was not always the road to truth. The model, himself, of an useful observer, he furnished even rules to guide others in research, and was willing to teach by precept, what he

illustrated by his example. It would be difficult to find a more astonishing chapter in the annals of science, than the first of his *History of Animals*. Discussing the internal and external organization in man and animals, distinguishing these into two great classes by the color of their blood, examining the arrangement of foetal structures, he stands out in the twilight of ages with the lamp of reason at his side, with no materials at his command for systematic combinations, yet observing with discernment, describing with perspicuity, classifying with method and generalizing with genius. It would be no equitable part of criticism to detract from so much merit, by fastidious representations of what has since been attained, nor would it much diminish the lustre of Aristotle—the great prototype of philosophers, naturalists and anatomists, to relate in what the veins differ from arteries, or nerves from tendons; that the aponeuroses are no expansions of the nerves, or that these never come from the heart.

At the school of Alexandria, where to have studied was extolled in commendatory terms, Erasistratus and Herophilus taught. The brain, justly esteemed most complex in structure and function, never deterred Erasistratus from extensive comparisons of it in man and animals. And Herophilus, whom it pleased Fallopius to designate as the great evangelist of anatomists—who made necropsies in search of the cause of death, and extracted cataract—was the first to trace the nerves from the brain, to discover the arachnoid, and the common confluence of the cerebral veins, to give name to the duodenum and the structures of the eye, whose in-

tricate arrangement he unfolded with extraordinary sagacity. In the anatomy and physiology of the vegetable world we find the labors of Theophrastus and Dioscorides, and to their discoveries but little was added either by Celsus or Pliny.

By such then were challenged the scholastic prescriptions of the age. Such again were those whom no philosophy could dissuade from pursuing what was useful, and who, ready to promulgate the decisions of truth, were contented to be stigmatized as profitless inquirers if they could one day be regarded as worthy benefactors.

During the middle ages when learning slumbered, or was only agitated by the deceptions of imagination which disturbed the darkness of night, nothing was observed and therefore nothing was recorded. But among the nations of the east, who consumed much time in academic disputations, the spirit of research was not entirely disregarded. Here it must be remembered chemistry was cultivated and from here it grew into strength.

In the infancy of another civilization when the restoration of letters resuscitated the oracular authority of the ancients, Paracelsus towered among the approaching ruins of the Platonic and Galenic empires, so soon to be invaded by Ramus and conquered by Bacon. Now with the magic of his Archeus, and the play of planetary bodies on the one hand, and the authority of chemistry on the other Paracelsus affecting supreme command and scornful of restraint endeavored to resolve all animal functions and organic op-



erations into chemical processes, while he railed against the dogmatists with the extravagant rodomontade of a demented enthusiast. It cannot be matter of any great wonder that as chemistry attained to a demonstrative character, and was applied to whatever required to be proved, that one should have added celebrity to his name and supremacy to his systems who dignified the science with unlimited authority. This great innovator owed the power he enjoyed to the cures he effected and the conviction he produced by his varied experiments. It is a human weakness to regard those most, from whom we receive greatest enjoyment or relief, and he often is looked upon with indulgent leniency, whose vaunting boastings and degraded morals, even gratitude will not vindicate.

But learning was now to wear another and a different aspect. An era had arrived in the history of the world, when the old philosophy should give place to a new; when the mind should no longer be enclosed within a circle of abstract perceptions, elevating and ennobling in themselves, but of no possible benefit to man. No misdirected energies were now to be spent, in hoping for results which could never be obtained, or reaching at shadows that elude our grasp. This was an age, when, to benefit others as we would hope to be benefitted ourselves, would never be regarded a disgrace; and when, to discover what was useful from the operations of the mind, was encouragement to hope for the progress of intellect. Now might Archytas have invented all the appliances of mechanics, and Archimedes have extolled the powers of the lever, without

fear of abasing mathematics, by recording such results in their works. Philosophers were now to advance the comforts and securities of life, without being subjected to the unjust aspersions of a Seneca. That philosophy which, in the language of Bacon, was "to endow human life with new and abundant inventions," was also to liberate the mind from servile acquiescence to blind authority. Its immortal founder, in the plenitude of power, stood on an eminence which belonged to genius, and calling with a voice which belonged to benevolence, pointed, with a hand holding the sceptre of truth, to the only road which led to her dominions. "Surely," he exclaimed with ingenuous magnanimity, "*so far as concerns myself, I disclaim, willingly, all renown and glory of name, in whatever I now or subsequently may write, if I may only benefit the interests of man.*" Here was a system fitted to preside over the wants of man, and to be assumed as the guide in every inquiry. This was a philosophy which demanded facts that it might discover the principles they involved, that sought to generalize principles that it might establish laws. It thought it no dereliction of its dignity to descend to the lowest objects of observation, as it knew how to soar amidst the highest works of God. It promised abundant resources, for it encompassed the utmost bounds of human knowledge. With a vitality never to be expended, its advancement is coequal with time; with a comprehensiveness which cannot be surveyed, its victories are on every side.

To no department of learning could careful induction have been applied, with more sanguine expecta-



tions, than to Medicine. Nothing could have protected this profession more securely from empiricism, nothing have elevated her so high. With unaffected solicitude for the dignity of medical acquirements the immortal Bacon intreated adherence to such rational induction in the use of remedies as would by their curative results raise it immeasurably above the casualty of empirical success. It was he who encouraged others to pursue a road which would lead to a commanding height, whence the horizon would be widened and the eye range without obstruction. Beneath the banner whose inscription was "*nihil in intellectu quod non prius in sensu*" Harvey and Haller, Bichat and Bell inlisted. Let their labors attest the conquests which have been won. Great indeed have been the results and greater still would have been these early trophies of the Baconian philosophy had it not been for that imperfection of our nature which it is more easy to lament than to correct. Indeed we may affirm, without apprehending refutation, that of the difficulties which impede the progress of science none deserve to be more seriously regretted than the precipitance of the mind to *decide* on all occasions. It is the proclivity of genius to speculate, but presumption is as natural to ignorance and vanity as caution is irksome and profitless. To accept nothing but what has been tried by the severest tests of induction, and to suspend determination while the mind undecided and unprejudiced surveys patiently, and compares diligently, is a task too difficult for all to perform.

It will hardly then surprise those accustomed to

verify a gradation in the discovery of truth, that in an age less prepared than the present to discard all theory, and to indulge in speculation on safer guarantees, the brightest intelligences should on many occasions have anticipated nature. When few materials for inductive reasoning were accessible, this constant impulse may have been a means of eliciting debates which have since evolved light; and those who now began to devote most of their talents to attentive observations might well be allowed to fill up the intervals of time with fanciful illusions upon the causes of disease. Nor should it be asserted that the doctrine of causes was ever denounced in the teachings of Bacon. The highest aim of philosophic inquiry is the determination of the nature of these causes, but as they are remote and difficult of being apprehended they should be the last not the first steps of research.

Freedom of speculation continued in the midst of a more temperate spirit of inquiry, but it also partook of the doctrinal spirit of the times. There was that affiliation of sentiment among the theories advanced, which exhibited an unwillingness to reject what had already been adjudged as settled and correct. We may therefore detect, between Sydenham and Boerhaave, Hoffman and Cullen, many points of necessary resemblance. Nor were these opinions any longer purely imaginative and gratuitous, but as chemistry and mathematics were better understood they became the starting points which seemed to be required in the solution of every difficulty. The iatro-chemists educed their theories from the secretions of the body with the

same ardor of invention, yet confidence of success as if they labored among the implements of a laboratory; and the iatro-mathematicians, with scales, and thermometers, were busy amidst the machinery and workshops of the economy in determining the modality of every vital phenomenon. The full value and importance of these sciences were undoubtedly appreciated. but it is hardly necessary to remark that they were ill-prepared, at so early a period, to support the lofty decisions, which have characterized them since among the most indispensable adjuvants to medical science. Thus it was that Stahl refused the broad applications which the chemists advanced, and sought in the operations of the vital principle for the desired explanation of every phenomenon. Like whatever has eventually been recognized as useful, they were alternately rejected and received and as is too often observed, were perverted by a laudable design but exaggerated extension of their varied applications. From the conjoined labors of these schools much that is true has been gleaned, and though of the hypothetical chemistry of Sylvius and Willis little may be said, Boerhaave and Borelli may yet receive the tribute of applause. Of Boerhaave however it is not equally certain to which class of theorists he belonged. His extraordinary proficiency in anatomy chemistry and mathematics, prepared him to examine whatever they might dictate, and it is known that his devotion to the latter pursuit supplied him with a theory, long the remarkable doctrine of those days. His opinions on inflammation, on the **lensor** of the blood and acrimony of the humors will

show that, notwithstanding the educational influence of the exact studies upon his mind, he was not so closely attentive to deduction in medicine as his predecessor Sydenham, whose writings he confessed he always regarded with unfeigned admiration, and consulted with increasing advantage.

The adorned yet intelligible elegance and accuracy of Sydenham rendered him the most valuable authority among the moderns. With no specious doctrines to ornament his writings he deemed that talent best employed which could transfer to posterity a judicious record of faithful observations. Imbued with the spirit of logical research he believed that no accumulated increase of isolated facts could establish a premise, until their verisimilitude should be fully ascertained, and their correlation to some acknowledged and dependent principle illustrated. Though he taught the purest philosophy of medicine, and revolutionized this period of its history, yet, he argued that disease originated in some morbid agent which required to be expelled, and the operations of nature in effecting this result was the cause of the disturbance which ensued. The activity of the emunctories was called into requisition, and if this was impeded health could not be preserved.

Hoffman also with philosophic mind stopped not to regard the essential nature of causes, but endeavored only to examine their effects while in operation. He presumed that these mysterious influences acted upon the living solids of the body producing in them a peculiar spasm. The spasm of the tissues and of the

very vessels themselves repelled the regurgitating blood upon the heart and lungs, while these unduly stimulated impelled it again to the periphery. In this manner a centripetal and centrifugal or double course of the blood ensued, and inasmuch as the centripetal action overwhelmed both the organs of circulation and respiration, it was regarded dangerous in its character and to be carefully avoided, while the motion from the centre to the exterior, as it aroused all the energies of the system accompanied by full pulse and febrile action was a recuperative act of nature, one therefore to be aided and promoted. By this doctrine of solidism Hoffman showed his recusancy to the humoral speculations then in vogue. If Hoffman however was a respondent to the precepts of Boerhaave he undoubtedly furnished Cullen with the essential points of his theory. Their theoretical opinions are so nearly allied, though practically different, that we can hardly investigate the one without comparison with the other.

Cullen looked upon the primary encroachments of disease as the inducement of a state of universal debility, by the action of a remote cause upon the nervous centres. This it was which produced the spasm so much insisted on by Hoffman. The perturbations excited by this reaction were designed to dissipate the spasm, restore innervation and cure the disease. With Cullen debility constituted the disease. The first sanative movement by which all maladies were resolved was the spasm which, as has been stated the german pathologist pronounced as destructive.

The defective principles in the doctrine of Brown



invited him to no rigid scrutiny of the symptoms of disease, to no recondite applications of the therapeia of the art. Brown admitted two great classes of maladies, on the assumption of a property common to all tissues which he termed excitability. In health this property was acted on by stimuli in due degree, producing the normal state of excitement; an inordinate increase of stimuli was supposed to exhaust excitement, a diminution on the contrary produced its accumulation. There were two aberrations from the healthy standard. one of increased, another of diminished activity. These constituted his groups of Sthenic and Asthenic affections. It is plain that here was a theory too remote from cautious deduction, to be universally accepted, when nothing could retain rank in a growing science which had already learned the value of genuine philosophy. This author's opinions are the last we shall relate, though those of Darwin and Broussais might still be allowed to increase the list, particularly as the theory which referred all morbid actions to the class phlegmasiae, and ascribed the causes of fever to inflammation of the glands of Brunner and Peyer was for sometime held as a national trophy in the French school of pathology. But enough has been said to exemplify fully the disposition of the mind under the best direction, to be influenced by the sway of imagination.

It behooves those who would view philosophically the study of medicine to acquaint themselves with that process of induction which has assigned it its rank among sciences. Not that there is anything new in

this mode of reasoning—common to the earliest operations of the mind, and resorted to on all occasions—but a method so simple as to be universally used in reference to the ordinary occurrences of life must doubtless be often performed with careless indifference and injudicious unconcern, and when applied to the more important objects of inquiry is as likely to mislead the negligent as to direct the wise. It is an error therefore to suppose that because induction is always employed it must of necessity be always correctly performed, and there is little security in the belief that what seems so plain to common understandings does not require to be diligently studied. There is a false as well as a true induction, and were the nature of those facts which science demands more logically investigated there would be fewer errors in medicine to obstruct our progress, and less time expended in demolishing theories which have been honestly inculcated and authoritatively believed.

So necessary is inductive reasoning in every act of intellection that none are disposed to admit that they proceed in any inquiry without its assistance. Those who have wandered remotely into error have themselves boasted of the accuracy of their deductions, and there is no heresy which defaces the history of our science that is not equally clamorous in behalf of that very method by which they may be one and all confuted. Gall and Mesmer, Hanhemann and Priessnitz undoubtedly considered themselves injured champions in the cause of truth, and looked with laughter perhaps with contempt upon such who would question the

exactness of those precepts which converted a Broussais and an Elliottson.

The want of a just appreciation of the character of those examples required for logical inference and ignorance or neglect of the manner of weighing facts in mutual dependance on each other and in connection with cause and effect, has given rise to such prevalent fallacies as Phrenology, Mesmerism, Hydropathy and Homœopathy. It is not that the mode of reasoning, which their advocates adopt, has been improperly accomplished, or that the plan pursued is different from that which in other instances leads to the detection of error or the discovery of some great generalisation. Could the premises, upon which these *quasi*-sciences are imagined to depend, be assumed as correct it would be difficult to refuse our assent to the plausibility of the deductions, many of which are drawn as accurately in appearance as those which rewarded Harvey with the discovery of the circulation, and revealed to Bell the functions of the different order of nerves.

It is well then to know that in a philosophy, which by its proper apprehension is fraught with such deep interest to man, and that has long since been ennobled by the greatest achievements of intellect, that the recital of facts however numerous or apparently frequent their repetition is of little value, unless, to use the language of the schools, they be converted into prerogative facts. Induction, when it is drawn from instances of this nature will then be crowned with results more universal than the propositions from which



they are derived and will possess all the rigor of mathematical demonstration; but the simple enumeration of isolated facts can never extend so far as to the establishment of a universal law but upon the ground of probability. This is the key in the opinion of philosophers to the strange difficulty in the problem of induction—that a few examples in some cases are all-sufficient for the determination of an uncontroverted principle, while again hundreds of concurring instances may still prove inadequate to ensure such a result.

It is true, under these latter circumstances, the mind naturally assembles what it has observed into methodic combinations, as it searches intuitively for principles to sustain its decisions, and requires to be guided by these until further developments either invalidate or reject them. In medicine unfortunately this alternative is too often our only resource, and even where the diffusion of physiological truths has raised the principles of practice above either cavil or doubt, the incalculable variabilities of temperament which we designate by the term *idiosyncrasy*, stand ready to defeat all our hopes, and to disarm us of those means which reason has sanctioned.

A prerogative fact to use the language of Dr. Glover is one “which being examined yields results leading us to frame conclusions far more general than the instances examined.” Now such facts are clearly of supreme importance, as they lead us to include all the instances which exist, and which we have not, nor cannot possibly examine. Suffer me to illustrate this by an example. Let us suppose that a lepidopterous insect—a butterfly--

is presented to us for inspection, and that its mouth is discovered not to be formed of mandibles or jaws for masticating its food, as is the case with many kinds of insects, but of a suctorial appendage which can only admit liquids or extract juices. This now is an isolated fact. If another butterfly and then a third and a fourth be successively examined and each is found to present a similar apparatus, I yet have no right to infer the general proposition, that all butterflies are provided with a suctorial proboscis, but upon the ground of probability, for though I may extend my observations to nine hundred and ninety-nine instances, there is nothing to gainsay the assumption, that the next ten insects of the same order which may be brought me will present no such arrangement. But if I select one from each genus, and am able to establish that the intestinal canal differs from that in mandibulated insects for example: that there is no pharynx, that the œsophagus is continuous with the sucking tube, that the proventriculus—a kind of gizzard common to many other insects—is entirely wanting, and detect other modifications adapting the alimentary canal to the digestion only of juices, I have now established a dependance of the sucking tube upon the arrangement of the intestines, and by a knowledge of the correlation of the organic structures, have converted the few examined instances into prerogative facts, and am prepared to assert that any butterfly that may be discovered, of any of the genera, will possess a suctorial mouth.

We might multiply such illustrations at pleasure, but we cannot command a more pertinent example of

what should be understood by a prerogative fact than the one which we here cite :

“ There is a law that the external resemblances of plants are accompanied by a similarity of action on the systems of men and animals—in other words, plants of the same natural family have similar physiological properties. Now, from the examination of any number of cruciferous plants, and finding these plants to exercise a particular physiological effect, we have only an argument of probability, however strong, in favor of those plants which may belong to the family, and have not been examined. But if we could take a cruciferous plant, and *experiment* on it so as to exalt the *cruciferous form*, and find the physiological property was exalted with it, diminish the cruciferous form, and find the property diminished too, we should then get an idea of the essentiality of the connection subsisting between the form and the property, and apply the law deduced from the examination of a few plants to all the plants of the family examined or not.”

Similar prerogative instances exist in medicine, and from them, immutable laws might be deduced, if the idiosyncrasies of which we have spoken could possibly be controlled or removed. These individual peculiarities prevent their application, but can in no-wise subvert their truth.

That such disturbing influences are met with in the organic world, and do also appear to abrogate well established laws, permit me to exemplify with some proper illustrations. There is no better attested principle

in physics, than that all ductile metals, such as gold, silver, copper, &c., diminish in strength on being heated; we are even able to recognize somewhat of a proportion between the degree of heat and decrease of strength, yet when iron is examined, obedient to the above law it becomes weaker at 212 deg. than at 32 deg., and yet is found stronger at 400 deg. than at either of the other two points of temperature—a fact alone true of this common but wonderful metal; yet such is our faith in the law, that this is only regarded as an exception to be yet explained, and does not impair the law.

Heat again expands, while cold contracts all bodies; and though water follows this rule to a definite extent, it is familiar to all, that from a certain degree of temperature down to the freezing point, (while, therefore, it is yielding caloric,) water expands with prodigious force, and becomes specifically lighter—for ice floats upon the surface of water. In this instance, so little is the principle itself involved, that experimenters have endeavored to account for so strange an exception in the arrangement which the particles of water assume previous to their crystallization. Of such a nature, doubtless, are those mysterious influences which disconcert the operations of the best ascertained laws of life, and the most carefully established principles of therapeutics: these influences, inappreciable in themselves, become real and inevitable obstructions wherever they exist to medical accuracy; for no enumerations can compass their variableness—no application can surmount them with success.

With the flood of light, which an exact philosophic

mode of inquiry is continually pouring in upon the physiology of life, and the certainty of those results derived from the applications to practical medicine, it does appear strange indeed that some should affirm that there is no aid to be derived from induction in our profession, and that medicine is little more than a hypothetical art. To such as entertain so little faith in their calling, it is no want of charity to say, that they perhaps have yet to learn the severe requisitions for differential diagnoses, and the patient care with which the symptoms of disease have been judiciously observed and described. The years spent in detecting pathological changes in the tissues, and determining the action of remedial agents, have rolled on without their notice. They seem to forget that an art can only consist in the observance of those principles of science from which it is derived, and though it may have been practised before these were fully ascertained, on the ground of pure conjecture, that real skill in its exercise must ever depend upon a knowledge of the sciences, and an aptitude in the application of their precepts to practice. As medicine derives from every source of intellectual occupation, a thorough knowledge of all the collateral sciences which contribute to its fulfilment, however diligently pursued, is an undertaking of such colossal altitude as to be rarely reached. Consequently, we are far from implying that the humble efforts of a sagacious practitioner are seldom to be rewarded with success, because he may be unacquainted with the profundities of science; but as it is impossible for him to acquire all the approved rules of practice from

personal experience, it becomes of imperative necessity that he should reverence the precepts and generalisations, which balance the results of a world-wide experience, and that he should acquiesce with deference to the opinions of others.

A careful analysis of the arguments of those who limit themselves to pure conjecture, and take on trust what they know not how to prove, will show that they themselves hold tenaciously to repeated observations and individual experience, and by a strange self-infatuation discard the general suffrages of mankind for the restricted sphere of their imperfect labors, and pretend to reject those precepts and theories—the offsprings of long-continued and rational deduction—for the fulsome guesses of their own misdirected endeavors. Time is spent either in reckless unconcern as to the fate of their experiments, or in that overwhelming anxiety which knows no repose, and makes life a burden too weighty to be borne. They encourage themselves with the hope of experience, and cherish the delusive belief, that they have easily gained that confident assurance in their own judgment and skill, which only an enlightened discernment and true knowledge can confer.

Whoever then would investigate medical facts correctly, will find it no unimportant part of his study to have contemplated with care those methods, by which he may enlarge the limits of human acquirements, and prosecute truth with success. If he experiences an unfeigned degree of serious concern for the interests of humanity, and hopes to dignify his profession by important labors, he will exhibit a trust in its certainty

as grounded upon proof, based upon principles, and reached by rules; and while he toils for that skill by which it may be practised as an art, he will be ever mindful of those precepts which demonstrate it as a science.



